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Spirit of place in science park. Take ZJ Inno-Park as an example

Biao WANG¹, Luc ADOLPHE²

1. GCU, Institut National des Sciences Appliquées de Toulouse, France
bwang@insa.toulouse.fr

2. LRA, École Nationale Supérieure d'Architecture de Toulouse, France
luc.adolphe@toulouse.archi.fr

Abstract. *Concerning the environment feature and its stabilisation as well as its development, the theory of spirit of place is used in this article to analyse the main expressing forms of the spirit of place in science park, with an example from one of the most famous science parks in China, Zhangjiang Inno-Park. The aim of this article is to search and establish the character of the place in science park as well as its humane features, and to give some practical advices for creating a vigorous, harmonious humane settlement of future science parks.*

Keywords: *science park, spirit of place, environment*

High-tech industry, with its force of representatives of the economic model of the new era, is accelerating the restructuring of former industries and enhancing the quality of urbanization. But sometimes, while high-tech brings closer the people of distance, the distance of their souls are slipping much far away (Xiaolin, 2009). Grand narrative plan, monotonous mechanical landscape, production-performance-oriented building spaces, closed management and short-term speculation, all these are labeling an “impersonal” tag on many of nowadays science parks. Therefore, this paper brings the concept of “spirit of place”, with the example of Zhangjiang Innovation Park (ZJ Inno-Park as following), and explores the environment characteristics of science park and its stable development.

Introduction

Spirit of place

“Spirit of Place” is a concept from the book *“Genius loci: towards a phenomenology of architecture.”* The author Norberg-Schulz inherited the theory of existential phenomenon from Heidegger, used comparative analysis of environment and human characteristics of various regions in different periods, and criticised the current urban constructions trampling ecology, ignoring historical context and being away from the real-life (Christian, 1979).

In general, the spirit of place can be taken as an extraction and injection of humanistic thoughts and feelings of a site, an emotional induction rooted in the natural and historical changes of a site. If we call the feature of place under our eyes a kind of physical map, then the spirit of place is of the mental map, which is inter-winded with time and space, human and nature, reality and history (Xiangbei, 2006). It may be changed and interpreted in different ways as the development of architectural patterns and forms (Kening, 2008).

Science park

Science Park is also known as Research Park, High-Tech Park, Technology Innovation Center,

Science City, Technopoles, High-Tech industrial development Zone, etc., though among them there are some differences in scale or industrial nature. With the statements from IASP (International Association of Science Parks), AURP (Association University Research Parks, US), SPA (Science Park Association, UK), and other scholars, Science Park is defined broadly as follows: It is the high-tech industry base which integrates scientific research, education, production & trade, living and entertainment; the area based on intelligence-intensive activities and aiming to promote the new industries and the social-economic level of the city as well (Fengchen and Weiping, 2009).

ZJ Inno-Park, located in Pudong District, Shanghai, founded in July 1992, is one of most famous and early-built national science parks in China, with a 25 km² of planning area and 13.5 million m² of construction area, in which 4.3 million are for public office, R & D, and commercials, 4.4 million for industrial, 4.5 million for residential (see figure 1, the master plan). By the end of 2010, the number of tenant companies mounts up to 1905, with total 17 million employees¹. After nearly 20 years of development, the space environment of the park tends to be matured and stable, the image and features became more clear, and its prototype spirit of place appears.

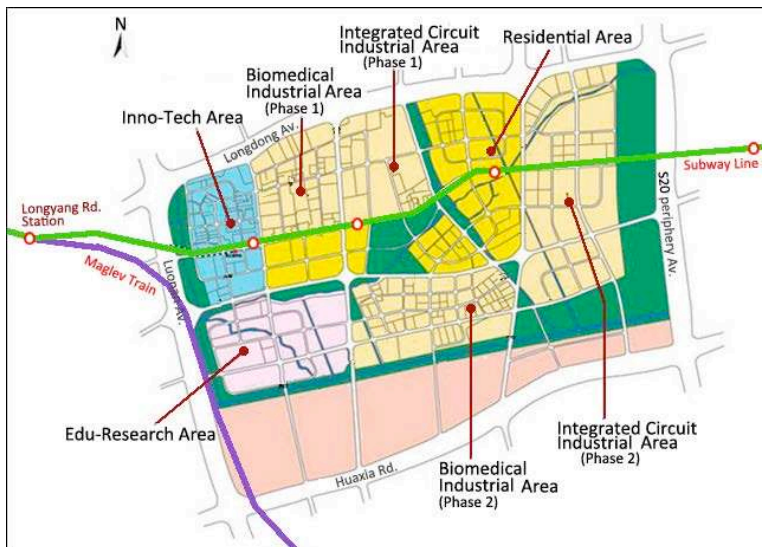


Figure 1. Master plan of ZJ Inno-Park

Content of spirit of place in science park

Here, by analysing the distinctive cultural quality of the space of science park we sum up in two parts of the spirit of place with their specific expressions.

Basic spirit of place – the sense of identification

The sense of identification of science park, includes space environment identification and unconscious psychological identification. The former represents the clear characteristics of physical environment, like the easy-recognised road system, architectural style, spatial structure and landscape feature; while the latter represents the abstract sense of awareness of its overall image, which is concerned to the culture publication, strategic positioning and

1. www.zhangjiang.net/Default.aspx?tabid=152

its social influence. As the physical position implies and strengthens the sense of identification, the strategic positioning of a science park will determine the basic connotation of its spirit of place. Therefore we analyse the sense of identification of science park by some different strategic positionings as follows (Biao & Fengchen, 2011):

1. Industry positioning type (by industry features)

Science park can locate its planning and features by defining the goal of different industries types, while the stable park environment and planning features gradually evolve into the spirit of place. ZJ Inno-park has determined since 1999 its strategy of development by focusing on the industries of integrated circuits, software and biomedicine, and now owns several titles of "national base" in these main areas and some other minor new areas. Inside the park, for different sub-parks with different industry goals the cultural atmosphere required and reflected is also different. For electronic software industrial parks, rigorous, standardised and orderly work type, and the pursuit of excellence in technology embody the spirit of place; while for the emerging cultural and creative industrial parks, the ambiance of innovative freedom, new generation, and encouragement for personal expression, is more concerned about the spirit of place.

2. Location positioning type (by geographic features)

With different geographical locations the science parks also show different development strategies. For parks in city outskirts, most generally they're positioned for the manufacturing sector for its low cost land use and few restriction of environment, or otherwise for the R&D headquarters base because of large-scale original landscape and more natural accessibility. But for the parks inside the city, while their lands are usually very small but with much more benefits from city infrastructure which are much attractive for incubators and small or medium-sized R & D offices, they care more about the sharing of resources, working efficiency, communication and cooperation.

ZJ Inno-Park locates in Pudong New Area which is newly developed since 1990, so apart from its concentration on the innovation and entrepreneurship, its development strategy also cares about developing the surrounding sub-urban areas, and promoting its local employment and socio-economic level. The advantage of land position, to some extent, helps it gathered also a number of large R & D headquarters (such as Panasonic, Lenovo, ZTE, etc.), and offers it a large recreation areas and potential developing areas.

3. Development phase positioning type (by era features)

Inspired by the industrial development phase theory of development zones (Guo, 2010), science park can also be categorised by three phases of development: manufacturing science park, creative science Park and service-oriented science park. Manufacturing science park is in the early stage of development, mostly the manufacturing companies with relatively low technical and value-added level, which express a kind of pragmatic, economic, mechanical and efficient image. While it's gradually introducing core technologies and owning independent innovative capabilities, the freedom of innovation, strict but full of dynamic competitions are the main tone of its time. And as the period of post-industrial era comes many science parks are gradually changing their roles as the producers of service, which focus on the expression of the human-oriented, quality of life and some certain artistic qualities as the spirit of place.

After nearly 20 years, ZJ Inno-Park has settled in majority many well-known enterprises with their core technologies, and some small amount of high-tech manufacturing and cultural services industries, for which it can be labeled as a creative science park. With the urban development and industrial structure upgrading of future Shanghai, the proportion of services in its industry will be gradually increased, and the gradual integration of its work environment and urban residential, commercial, leisure facilities is forming.

Of course, apart from the general recognition of the park from its planning and positioning, the park's transportation systems, landscape systems, sub-park architectural features, and

the culture of its tenant enterprises can also manifest and increase the features of park. For example, the main roads of ZJ Inno-Park were named very uniquely: north-south roads with names of famous foreign scientists such as Curie Rd., while east to west roads with of famous ancient Chinese scientists like Zhangheng Rd.. Therefore, to some extent the road name can help us find out the direction of way in the park.

Dominant spirit of place, the sense of belonging

Various positioning method helps determine the tone of the overall environment features of a science park, and the visitors are impressed by their own visits or by indirect photos and descriptions of the park from elsewhere, is the formation of space and culture identification. But for the park users or its workers, the establishment of the park's cultural identity and collective memory is more important, this relatively stable temporal and spatial memory and identity can promote a sense of belonging of workplace and a kind of inherent confidence and cohesion to their companies, which lead to the dominant spirit of place after well established the basic identification systems (Biao & Fengchen, 2011).

1. Cultural Identity

Cultural identity is a sense of identity by group, a psychological characteristic of an individual by the cultural influences of the group he belongs to. For science park workers, the cultural identity of the park comes from its positioning features, like natural environment, industrial patterns, social influence and development expectation. And it shows like recognition, trust, emotional dependence and psychological sustenance to the park or their own companies.

ZJ Inno-Park takes innovation and entrepreneurship for the leading function, and owns multi-mode, multi-type incubators, like National Torch Venture Park and Oversea Graduates Venture Park. The idea "Self-design, self-run, free-competition" and "Encourage success, tolerate failure" is being formed and touches in deep all park visitors and its own workers.

2. The collective memory

The collective memory is a memory of its past for a group with its own specific cohesion and identity. For science park, the collective memory is based on its cultural identity and formed by the memories accumulated through the time, like big events of the park, environmental features and changes, industrial development, social change, etc.

In ZJ Inno-Park, the feeling and memory for its different groups also vary. For entrepreneurs, the focus is on industrial development, investment environment and policy guidance; for ordinary employees is on the small area of working and living environment concerned, the strength and the culture of enterprises; while for the original inhabitants it is mostly of the big event of the park, the transformation and improvement of the physical environment and facilities, business opportunities and social welfare development, as well as some social contradictions like culture intrude and land occupation.

Overall, the set up of the sense of identification for a science park needs to be done according to the park's developing situation and its features by the constructor and manager, while the cultivation of the sense of belonging needs the combined efforts from manager, enterprises and all the individuals concerned. Meanwhile, because of the big differences from individual perception and understanding, it's strongly proposed that the park's manager and its enterprises take the initiative and useful actions and publicities, to lead and cultivate a positive and relatively unified cognition and spirit of place.

Different types of spirit of place in science park

ZJ Inno-Park is a complex park, which includes a number of sub-parks for incubators or big enterprises, residential quarters and so-called Talents Apartment, public education and research institutions, medical and health service centers, recreation and catering points, and many other types of service facilities for productive, economic and living activities. With

analysis of the spirit of place for different types of science parks (see table 1), we can find some rough lines for the planning of ZJ Inno-Park:

1. Each chunk clearly divided for specific function (like Inno-Tech area, biomedical industrial area, etc.);
2. The idea of construction phases well used for the four chunks of industrial areas, facing the operation flexibility and real development situation;
3. Good combination of land-use planning and landscape design which well linked with residential area inside the park and the general city landscape system.

| Type | Environment Characteristics | Spirit of Place |
|-----------------------|---|--|
| Incubator Park | Tidy, orderly, general use, economical and practical, unitized modules. | Focus on ambience of innovation, high update frequency, simple, durable, approachable, industrious. |
| Research Park | Small volume, much interspersed and shared space, design in style, materials and technology in trend, high quality of environment. | Fine and delicate, stimulating exchange and cooperation, ambience of life, respect for nature, pursue of perfection, fashion and art. |
| Technology Park | Generally situated in the suburbs, large-scale, with technical factories and some R & D, clear structured and ordered, ordinary forms and styles, practical, close-managing. | Rigorous, pursuit of mechanical efficiency and short-term production, focusing on economic input-output, close labour division and coordination, few personalities. |
| Enterprise-owned Park | Uniformed space type, unique style of its own, outstanding and close-managing from the surroundings. | Pursuit of independence and freedom of expression of its distinct enterprise culture, strong sense of identification. |
| Complex Park | Complex space types, hierarchical structured, overall open and shared, divided sub-groups enclosing with its internal uniformed style, large-scale commercial and life service center, thematic and more visual-like landscape. | Open, tolerant to and prepared for various kinds, closely linked with urban functions and social responsibilities, magnificent and with strong visual impact, and the more often neglected overall impression by individuals than of the sub-parks which they bind to. |

Table 3. Analysis of Different Types of Spirit of Place in Science Park

However, according to a life survey in ZJ Inno-Park (Yan *et al.*, 2007), we also found many problems in reality. 46.7% of respondents believed that the ZJ should increase the number of supermarkets or groceries, which ranked the first need to add for real life. The second is for restaurants or canteens (36.1%) and the third the public sports facilities (28.4%). They complain that “To buy a drink we need to walk far away, to take a newspaper we need to walk far away and to have a lunch we still need to walk far away.” This reveals the deficiency of the original planning which focused on function division but not on the complex need and integration of daily life and other economical or productive activities. And for the opinion on the function of greenery of the park, 77% of respondents take it like decoration of environment, and only 29% of them take it as a place for recreation while another 9% take it as nothing useful. This shows the lack of humanity, the lack of consideration for human interaction and communication for the greenery in the original plan. Further more, majority of interviewees (64%) like the mode “Live in ZJ and work in ZJ”, while the biggest problem of not choosing not live there is that it's still “a little bit lonely and not enough prosperous”(40%). From which we can see that, even though ZJ Inno-Park has an ambitious prospective and already in the high way of positive development, it still needs a lot of work in details to be supplemented, still a lot of humane treatment for the environment, and only in this way the space environment of the park will be fully and well used, and the emotional attachment to this land and memory of the site will be deepened.

Conclusion

Spirit of place is a sort of sediment of time, which needs a long process for its formation and establishment. Because of this, the mind of full-life-cycle is of particular importance for its forming and maintaining. From the site analysis and original qualities refining, to the space environment design and gestation of new spirit of place, to the evolution of space features over time and rendering of the spirit of place, and to the maintenance, management and renewal of the site, as well as the preservation and transformation of the spirit of place, are all that we need to consider carefully.

As an important carrier of enhancing urban economy, science park is not only a place for production, R & D and supporting service, but also a kind of habitat of people. While the quality of urban life is increasing, the construction of science park environment needs also improving from the initial decorative landscaping for investment, from the mid-term phase for industrial environment stability, to the final harmonious living environment. From this point of view, through the example of ZJ Inno-Park, science parks in developing countries like China still need a long way to go, in aspect of mature industrial chain and cultural, ecological environment construction. The theory of the spirit of place, as an important means of analysis of the human environment, will be of great significance in promoting the science park's positioning, outstanding its features, enhancing its social cohesion and maintaining its sustainable development.

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Authors

Biao Wang, PhD student, studying in LMDC, Department of Civil and Urban Engineering, INSA-Toulouse and Laboratory of Architecture Research, ENSA-Toulouse.

Luc Adolphe, Professor and researcher in field of urban morphology, microclimate and energy, INSA-Toulouse and ENSA-Toulouse.